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Congenital Heart Disease

UNEXPECTED LATE CORONARY ARTERY ABNORMALITIES AFTER ARTERIAL SWITCH OPERATION FOR TRANSPOSITION OF THE GREAT ARTERIES

Poster Contributions
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Background: Arterial switch operation (ASO) is a common surgical intervention for d-loop transposition of the great arteries (d-TGA). The incidence of late coronary artery complications may be underestimated due to lack of clinical symptoms and limitations in non-invasive studies.

Methods: We investigated coronary artery morphology in 28 patients with uneventful initial postoperative course out of 91 patients who underwent ASO between 1998 and 2013. Twenty six patients had coronary angiogram. We correlated the identified coronary artery abnormalities with clinical manifestation of myocardial ischemia.

Results: Total 6 patients developed significant late coronary artery abnormalities. One asymptomatic patient died suddenly at age 3.75 years and was found to have severe left coronary artery (LCA) ostium stenosis at autopsy. Second asymptomatic patient collapsed during lacrosse game due to ventricular fibrillation at age 10 despite negative prior exercise stress test (EST) and myocardial perfusion scan. Coronary angiogram revealed severe ostium stenosis of LCA. The third patient, with exercise-induced ST-T depression and reversible myocardial perfusion defect was shown to have complete occlusion of LCA with collateral vessel formation. The fourth patient was found to have moderate ostial stenosis of LCA. The fifth patient had complete occlusion of left circumflex (LCX) artery with collateral vessel formation. The sixth patients had moderate long-segment right coronary artery (RCA) stenosis due to severe neoaortic dilatation. None of 6 patients showed clinical signs of coronary ischemia at outpatient visits and only one showed positive EST for myocardial ischemia. Six other asymptomatic patients showed trivial to mild narrowing of LCA by a routine selective coronary angiogram.

Conclusion: Although the true incidence of coronary artery occlusion after ASO is unknown, conventional non-invasive tests including EST and nuclear myocardial perfusion scan were not reliable in detecting coronary abnormalities after ASO. We advocate that all patients after ASO warrant routine coronary image studies during late childhood before participating in competitive sports.